Five cases of erroneously diagnosed HIV infection

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In North America over 1 million people are likely infected with the human immunodeficiency virus (HIV), and in many acquired immunodeficiency syndrome (AIDS) will eventually develop.[1,2] The diagnosis of HIV infection, with its potential for severe illness, financial loss and premature death, can cause great distress and anxiety to the infected patient and also to friends, family and sexual partners.[3-7] It is therefore critical for both the patient and the physician, who is a focus for the interaction between patient, laboratory and third-party agencies, to be certain of the diagnosis.

We describe five unusual situations in which people incorrectly reported as HIV seropositive were referred to our clinics.

Case reports

Case 1

Soon after his lover's death from AIDS a 30-year-old man was admitted for psychiatric care with a diagnosis of suicidal ideation. The patient described a history of activities placing him at high risk for HIV infection, extensive weight loss (36 kg), drenching night sweats and a recent HIV-positive test result. Physical examination was compatible with some weight loss and revealed minimal lymphadenopathy. The CD4 lymphocyte count was 1.113×10^9/L (the proportion of CD4 lymphocytes was 51%), but there was an elevated serum IgA level, 4.54 g/L. His history of being HIV positive was accepted without further testing.

After discharge unexplained watery diarrhea developed, which was eventually controlled with somatostatin. The patient obtained financial support from a government program for the medically handicapped and was active in the local AIDS community groups.

Because of dissatisfaction with his physicians and for social reasons he transferred his care between hospitals several times, seldom seeing a physician more than once. He was admitted to one hospital with suicidal ideation and later assaulted several health care workers. A number of samples taken at this time for HIV antibody testing failed to show any evidence of infection. He was eventually discharged with a diagnosis of severe manipulative and violent behaviour that was unlikely to respond to therapy. Since then he has been admitted to at least four other hospitals with claims of suicidal ideation and HIV infection.

Case 2

A 37-year-old businessman requiring additional commercial insurance underwent a physical examination and venipuncture by a paramedical person. The blood sample was sent by the insurance company to a central laboratory for HIV antibody testing; 1 month later the man was denied additional insurance because his sample was found to be positive for HIV antibodies, as determined by means of two enzyme-linked immunosorbent assays (ELISAs) and confirmed by the immunoblot technique.

Close questioning failed to reveal any activities that might have exposed the patient to HIV infection. He and his wife were found to have negative results for HIV antibodies through ELISA, the immunoblot technique and a radioimmune precipitation assay performed on three separate occasions when the blood samples were drawn by us and hand-delivered to our reference laboratory. His CD4 and CD8 lymphocyte counts determined by means of flow cytometric analysis were normal.

The patient underwent extreme stress, difficulties in his marriage and marked anger and depression because of the false-positive report. His insur-

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ance company denied that any error could have occurred and has refused to communicate with him further.

The most logical explanation is that our patient's blood sample or report was confused with that of another patient. This error has likely reassured someone actually infected with HIV that he or she is uninfected.

Case 3

A 22-year-old bisexual man who used intravenous drugs had twice been found to be negative for HIV antibodies over a 6-month period while under the care of two physicians. Two months later another blood sample, submitted to our laboratory while the patient was in an institution, was found to be positive by means of both ELISA and the immunoblot technique. The result was returned to the ordering physician at the institution, who counselled the patient concerning the significance of the result. The patient told several other people, and the information became widely known, causing the patient long-lasting social distress. He had two further tests performed through his original physicians 2 and 6 months later that both yielded negative results.

Only one other sample had been sent by the institution to our laboratory for HIV antibody testing on the same day the patient's sample had been forwarded to us. The other patient was and still is HIV negative. We have confirmed that the original specimen, allegedly from the patient in this report, was repeatedly positive. Shortly after the positive result had been received at the institution the health care worker who had drawn the sample and who had access to the result resigned. He has subsequently been seen for management of HIV infection. We feel that specimen mix-up is impossible and that the health care worker substituted his own blood for the patient's in order to be tested.

Case 4

A blood sample from a man with persistent generalized lymphadenopathy and a history of activities with a high risk for HIV infection was submitted along with other samples from a satellite laboratory. It was found to be negative for HIV antibodies. Another sample from a woman describing negligible high-risk activities was repeatedly positive. Two further blood samples obtained from her (without intermediate processing elsewhere) were negative. We have been unable to find the man with lymphadenopathy to undergo repeat testing. We suspect that an error occurred in the satellite laboratory when the samples were decanted into new vials and relabelled after centrifuging.

Case 5

In early 1988 a 24-year-old laboratory technologist was sprayed with a patient's blood because of a machine failure. She was given hepatitis B immune globulin as prophylaxis against infection and was referred to a physician. After counselling, baseline HIV antibody testing was done; 2 weeks later she was informed that there had been a strong reaction in the ELISA and that the Western blot technique had shown some features suggestive but not conclusively diagnostic of HIV infection (strongly positive only for antibodies to gp 160). When we tested a sample 3 weeks and 3 months later the ELISA was nonreactive and the immunoblot technique did not show any bands. We believe that the immune globulin caused her initial false-positive ELISA result and the indeterminate immunoblot results.

Comments

The diagnosis of HIV infection carries major personal, social and financial implications. Errors may not only cause great distress to patients but also waste health care and social resources.[3,5-7] The accuracy of tests for HIV infection and the honesty of most patients may give health care providers a false sense of security. Our experiences with the cases described should alert health care providers to the errors that may lead to a false diagnosis.

Other cases have been reported[8-17] in which patients falsely claimed to have AIDS or HIV infection. Malingerers usually expect to gain some personal, social or financial advantage from the diagnosis of disease. People with a clearly defined underlying psychiatric illness such as psychosis, depression, anxiety, Münchausen syndrome or bipolar personality disorder have also claimed to have AIDS. Even the fabrication of medical records on stolen stationery has been reported: the patient claimed to have manifestations of AIDS that required narcotics for pain control.[16]

In the laboratory the false-positive ELISA results that may arise have attracted the most interest so far. However, a subsequent confirmatory test with high specificity reduces the incidence of such results for a given sample to 0.0007% in a population at very low risk of infection.[18,19] A second cause of false-positive results is passive immunization, as in the last case described. The administration of immune globulin that may contain HIV antibodies can cause a temporary reaction on screening and confirmatory tests.[20,21]. The result is negative after the donor's antibodies have cleared from the recipient.

An incorrect diagnosis because of specimen mislabelling or report mix-up in HIV antibody testing has not been previously described to the best

of our knowledge. In transfusion medicine, laboratory error can have obvious and tragic consequences; mistakes such as obtaining blood from the wrong patient or specimen mislabelling have been documented.[22-24] In a review of 70 transfusion-related deaths reported between 1976 and 1978 clerical errors were involved in 33.[24] Stringent measures to avoid such errors have been used for many years by the transfusion services. Unfortunately, for various reasons — such as fear of litigation and the difficulties in documenting such problems beyond a reasonable doubt — specimen mislabelling attracts less attention in routine clinical laboratories. However, such errors can still have serious consequences.[25,26] With regard to HIV infection accidental mislabelling could result not only in unnecessary anxiety to someone with an incorrect positive test result but also in reassurance to someone with a false-negative result, who may then inadvertently infect others and be delayed in receiving medical intervention.

Deliberate specimen mislabelling may be more likely to occur when anonymous or confidential testing is unavailable; health care workers may be tempted to substitute their blood for a patient's to undergo testing. In case 4 anonymous and confidential testing was readily available. However, it is likely that a poor appreciation of these services, concern about confidentiality and possible stigmatization, and easy access to both the sample and the results contributed to the substitution. The choice of someone with a history of activities of high risk for HIV infection made it unlikely that the substitution would be detected easily. Such deliberate mislabelling of specimens is probably very rare, but the case emphasizes the importance of guaranteeing confidential HIV antibody testing and of making such a service and its guarantees widely known and aggressively promoted.

Our experience suggests that false-positive results of HIV antibody testing may occur more often and for more reasons than are generally recognized. The problem may be partially corrected by strict adherence to certain protocols: obtaining a release of information from other institutions, appropriate counselling before and after testing, and verification of a positive result by means of testing a second sample either for HIV infection or immunodeficiency. However, improved laboratory procedures to reduce the risk of accidental or deliberate mislabelling would be of further assistance in reducing the incidence of false-positive test results.

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